

WHAT IS CLAIMED IS:

1. An electric cable insert for removably electrically connecting a cable having multiple conductors to a mating receptacle having a plurality of sockets, the insert comprising:
 - a plurality of electrically conductive pins for connecting to respective sockets in the mating receptacle;
 - a sealing gland having a plurality of bores therethrough, each of the cable conductors passing through a respective one of the bores in the sealing gland;
 - means for electrically connecting the cable conductors to respective pins; and
 - means for compressing the sealing gland so as to seal the insert from the environment.
2. The insert of claim 1, wherein the means for compressing the sealing gland comprises:
 - a housing having an internal cavity therein, the sealing gland fitted within the cavity thereof; and
 - a driver secured to the housing and compressively engaging the sealing gland within the housing cavity.
3. The insert of claim 2, wherein the housing includes a side wall, the driver surface includes a retaining groove therein, and wherein the driver is secured to the housing by a crimp in the side wall of the housing pressed into the retaining groove in the driver surface.
4. The insert of claim 2, wherein the housing has an end with a plurality of orifices therethrough, and wherein each of the pins projects through a respective one of the orifices in the housing end for connecting to the mating receptacle.
5. The insert of claim 4, further including a contact header disposed within the housing cavity for maintaining a spaced relationship between the pins, each of the pins passing through the contact header.
6. The insert of claim 5, wherein the pins include shoulders engaging the contact header for securing the pins to the contact header.

7. The insert of claim 5, wherein the sealing gland includes nipples on its surface surrounding the opening to each of the bores therethrough, and wherein the contact header and the driver each have corresponding counterbores in their surfaces for receiving respective nipples on the sealing gland for improved sealing of the insert when the sealing gland is compressed.

8. The insert of claim 5, further including a seal disposed within the housing adjacent the housing end having the orifices therethrough.

9. The insert of claim 8, wherein the seal has a plurality of orifices therethrough, each of the pins passing through a respective one of the orifices in the seal.

10. The insert of claim 9, wherein the seal has two opposite sides and further includes a plurality of tubes projecting from one side thereof, the tube bores forming extensions of the orifices through the seal, each of the tubes projecting through a respective orifice in the end of the housing.

11. The insert of claim 1, wherein the means for electrically connecting the cable conductors to the respective pins comprises crimp/socket contacts having a socket on one end for sliding onto a pin and a deformable portion on the opposite end for crimping to an end of a respective conductor.

12. An electric cable insert for removably electrically connecting a cable having multiple conductors to a mating receptacle having a plurality of projecting pins, the insert comprising:
a plurality of receiving sockets for receiving respective pins on the mating receptacle;
a sealing gland having a plurality of bores therethrough, each of the cable conductors passing through a respective one of the bores in the sealing gland;
means for electrically connecting the cable conductors to the respective receiving sockets; and
means for compressing the sealing gland so as to seal the insert from the environment.

13. The insert of claim 12, wherein the means for compressing the sealing gland comprises: a housing having an internal cavity therein, the sealing gland fitted within the cavity thereof; and
a driver secured to the housing and compressively engaging the sealing gland within the housing cavity.

14. The insert of claim 13, wherein the housing includes a side wall, the driver surface includes a retaining groove therein, and wherein the driver is secured to the housing by a crimp in the side wall of the housing pressed into the retaining groove in the driver surface.

15. The insert of claim 13, wherein the housing has an end with a plurality of orifices therethrough for receiving respective pins on the mating receptacle for insertion within respective receiving sockets of the insert.

16. The insert of claim 13, wherein the receiving sockets include projecting pins thereon for connection to respective cable conductors.

17. The insert of claim 16, wherein the means for electrically connecting the cable conductors to the respective receiving sockets comprises crimp/socket contacts having a contact socket on one end for sliding onto a receiving socket pin and a deformable portion on the opposite end for crimping to an end of a respective cable conductor.

18. The insert of claim 16, further including a contact header disposed within the housing for maintaining a spaced relationship between the receiving sockets, each of the receiving sockets passing through the contact header.

19. The insert of claim 18, wherein the receiving sockets include threads engaging the contact header for securing the receiving sockets to the contact header.

20. The insert of claim 18, wherein the sealing gland includes nipples on its surface

surrounding the opening to each of the bores therethrough, and wherein the contact header and the driver each have corresponding counterbores in their surfaces for receiving respective nipples on the sealing gland for improved sealing of the insert when the sealing gland is compressed.

21. An electric cable insert for removably electrically connecting a cable having multiple conductors to a mating receptacle having a plurality of sockets, the number and configuration of the cable conductors being different from those of the sockets of the mating receptacle, the insert comprising:

a plurality of spaced receptacle pins for connecting to respective sockets in the mating receptacle, the number and configuration of the receptacle pins matching those of the receptacle;

a sealing gland having a plurality of bores therethrough, the number and configuration of the bores matching those of the cable conductors, each of the cable conductors passing through a respective one of the bores in the sealing gland;

means for conductively transitioning from the number and configuration of the cable conductors to the number and configuration of the sockets of the mating receptacle; and

means for compressing the sealing gland so as to seal the insert from the environment.

22. The insert of claim 21, wherein the means for conductively transitioning from the number and configuration of the cable conductors to the number and configuration of the sockets of the mating receptacle comprises a circuit card having a first side and a second side, the spaced receptacle pins being attached to and extending from the first side thereof; and

a plurality of spaced contact pins attached to and extending from the second side of the circuit card, the number and configuration of the contact pins matching those of the cable conductors.

23. The insert of claim 22, wherein the circuit card comprises a pair of interconnected printed circuit boards.

24. The insert of claim 22, wherein the sealing gland includes nipples on its surface

surrounding the opening to each of the bores therethrough, and wherein the circuit card has corresponding counterbores in its surface for receiving respective nipples on the sealing gland for improved sealing of the insert when the sealing gland is compressed.

25. The insert of claim 22, further including crimp/socket contacts for electrically connecting the cable conductors to the respective contact pins on the circuit card, the crimp/socket contacts having a socket on one end for sliding onto a contact pin and a deformable portion on the opposite end for crimping to an end of a respective conductor.

26. The insert of claim 21, wherein the means for compressing the sealing gland comprises: a housing having an internal cavity therein, the sealing gland fitted within the cavity thereof; and

18

a driver secured to the housing and compressively engaging the sealing gland within the housing cavity.

27. The insert of claim 26, wherein the housing includes a side wall having at least one orifice therethrough, the driver surface includes a retaining groove therein, and wherein the driver is secured to the housing by a shear pin inserted through each orifice in the side wall of the housing and engaging the retaining groove in the driver surface.

28. The insert of claim 26, wherein the sealing gland includes nipples on its surface surrounding the opening to each of the bores therethrough, and wherein the driver has corresponding counterbores in its surface for receiving respective nipples on the sealing gland for improved sealing of the insert when the sealing gland is compressed.

29. The insert of claim 26, wherein the housing has an end with a plurality of orifices therethrough, and wherein each of the spaced receptacle pins projects through a respective one of the orifices in the housing end for connecting to the mating receptacle.

30. The insert of claim 29, further including a seal disposed within the housing adjacent the housing end having the orifices therethrough.

31. The insert of claim 30, wherein the seal has a plurality of orifices therethrough, each of the receptacle pins passing through a respective one of the orifices in the seal.

32. The insert of claim 31, wherein the seal has two opposite sides and further includes a plurality of tubes projecting from one side thereof, the tube bores forming extensions of the orifices through the seal, each of the tubes projecting through a respective orifice in the end of the housing.

33. An electric cable insert for removably electrically connecting a cable having multiple conductors to a mating receptacle, the insert comprising:

a housing having two opposite ends and an internal cavity, the first end open to the cavity and the second end having a plurality of orifices therethrough;

a seal disposed within the housing, the seal having two opposite sides and having a plurality of tubes projecting from one side thereof, the tube bores extending through to the opposite side of the seal, each of the tubes mating with a respective orifice in the second end of the housing;

a contact header disposed within the housing adjacent the seal, the header having first and second sides;

a plurality of electrically conductive pins extending through the header, each pin having a first end projecting from the first side of the header and through a respective one of the seal tube bores for electrically connecting to the mating receptacle, and a second end projecting from the second side of the header;

a sealing gland disposed within the housing adjacent the contact header, the gland having a plurality of bores therethrough; and

a driver compressively engaging the gland so as to seal the insert from the environment, the driver having a plurality of bores therethrough, each of the conductors of the cable passing through a respective one of the bores in the driver and in the sealing gland and electrically connecting to the second end of one of the pins.

34. The insert of claim 33, further including means for securing the pins to the contact

header.

35. The insert of claim 34, wherein the means for securing the pins to the contact header comprise circumferential shoulders on the pins, the shoulders engaging the contact header.
36. The insert of claim 33, further including crimp/socket contacts for electrically connecting the cable conductor ends to the second ends of the pins.
37. The insert of claim 36, wherein the crimp/socket contacts each have a socket on one end for receiving the second end of one of the pins, and a deformable portion on the opposite end for crimping to one of the cable conductor ends.
38. The insert of claim 33, wherein the sealing gland includes nipples on its surface surrounding the opening to each of the bores therethrough for improved sealing of the insert when the sealing gland is compressed.
39. The insert of claim 38, wherein the bores in the driver are counterbored for receiving respective nipples on the adjacent surface of the sealing gland.
40. The insert of claim 33, further including means for securing the driver to the housing.
41. The insert of claim 40, wherein the housing includes a side wall, the driver surface includes a retaining groove therein, and wherein the means for securing the driver to the housing comprises a crimp in the side wall of the housing pressed into the retaining groove in the driver surface.
42. An electric cable insert for removably electrically connecting a cable having multiple conductors to a mating receptacle having a plurality of projecting pins, the insert comprising:

a housing having two opposite ends and an internal cavity, the first end open to the cavity and the second end having a plurality of orifices therethrough;

a contact header disposed within the housing adjacent the second end thereof, the header having first and second sides;

a plurality of spaced receiving sockets for receiving respective pins on the mating receptacle, each receiving socket projecting from the first side of the contact header, the receiving sockets passing through the contact header and having pins projecting from the second side of the contact header for connection to respective cable conductors;

a sealing gland disposed within the housing adjacent the contact header, the gland having a plurality of bores therethrough; and

a driver compressively engaging the gland so as to seal the insert from the environment, the driver having a plurality of bores therethrough, each of the cable conductors passing through a respective one of the bores in the driver and in the sealing gland and electrically connecting to one of the receiving socket pins.

43. The insert of claim 42, wherein the receiving sockets include threads engaging the contact header for securing the receiving sockets to the contact header.

44. The insert of claim 42, further including crimp/socket contacts for electrically connecting the cable conductors to the receiving socket pins, each crimp/socket contact having a socket on one end for connection to a receiving socket pin, and a deformable portion on the opposite end for crimping to an end of a respective conductor.

45. The insert of claim 42, wherein the sealing gland includes nipples on its surface surrounding the opening to each of the bores therethrough, and wherein the bores in the driver are counterbored for receiving respective nipples on the adjacent surface of the sealing gland for improved sealing of the insert when the sealing gland is compressed.

46. The insert of claim 42, further including means for securing the driver to the housing.

47. The insert of claim 46, wherein the housing includes a side wall, the driver surface

includes a retaining groove therein, and wherein the means for securing the driver to the housing comprises a crimp in the side wall of the housing pressed into the retaining groove in the driver surface.

48. An electric cable insert for removably electrically connecting a cable having multiple conductors to a mating receptacle having a plurality of sockets, the number and configuration of the cable conductors being different from those of the sockets of the mating receptacle, the insert comprising:

a housing having two opposite ends and an internal cavity, the first end open to the cavity and the second end having a plurality of orifices therethrough;

a seal disposed within the housing, the seal having two opposite sides and having a plurality of tubes projecting from one side thereof, the tube bores extending through to the opposite side of the seal, each of the tubes mating with a respective orifice in the second end of the housing;

a circuit card for conductively transitioning from the number and configuration of the cable conductors to the number and configuration of the sockets of the mating receptacle, the circuit card having a first side and a second side,

a plurality of spaced receptacle pins attached to and extending from the first side of the circuit card and through respective orifices in the second end of the housing for connecting to respective sockets in the mating receptacle, the number and configuration of the receptacle pins matching those of the receptacle sockets;

a plurality of spaced contact pins attached to and extending from the second side of the circuit card, the number and configuration of the contact pins matching those of the cable conductors;

a sealing gland disposed within the housing adjacent the circuit card, the sealing gland having a plurality of bores therethrough, the number and configuration of the bores matching those of the cable conductors, and

a driver compressively engaging the gland so as to seal the insert from the environment, the driver having a plurality of bores therethrough, each of the conductors of the cable passing through a respective one of the bores in the driver and in the sealing gland and connecting to one of the contact pins extending from the circuit card.

49. The insert of claim 48, wherein the circuit card comprises a pair of interconnected printed circuit boards.

50. The insert of claim 48, further including crimp/socket contacts for electrically connecting the cable conductors to the contact pins on the circuit card, each crimp/socket having a socket on one end for attaching to a contact pin, and a deformable portion on the opposite end for crimping to an end of a respective conductor.

51. The insert of claim 48, wherein the sealing gland includes nipples on its surface surrounding the opening to each of the bores therethrough, and wherein the surfaces of the circuit card and the driver are counterbored for receiving respective nipples on the sealing gland for improved sealing of the insert when the sealing gland is compressed.

52. The insert of claim 48, further including means for securing the driver to the housing.

53. The insert of claim 52, wherein the housing includes a side wall having at least one orifice therethrough, the driver surface includes a retaining groove therein, and wherein the means for securing the driver to the housing comprises a shear pin inserted through each orifice in the side wall of the housing and engaging the retaining groove in the driver surface.

act
a